

WO 2005/026364

APPLN. FILING DATE: APRIL 19, 2005

12004/000540

TITLE: SELECTION SYSTEM CONTAINING NON-ANTIBIOTIC RESISTANCE SELECTION MARKER

INVENTOR(S): TANEL TENSON ET AL.

APPLN. NO.: 010315-224

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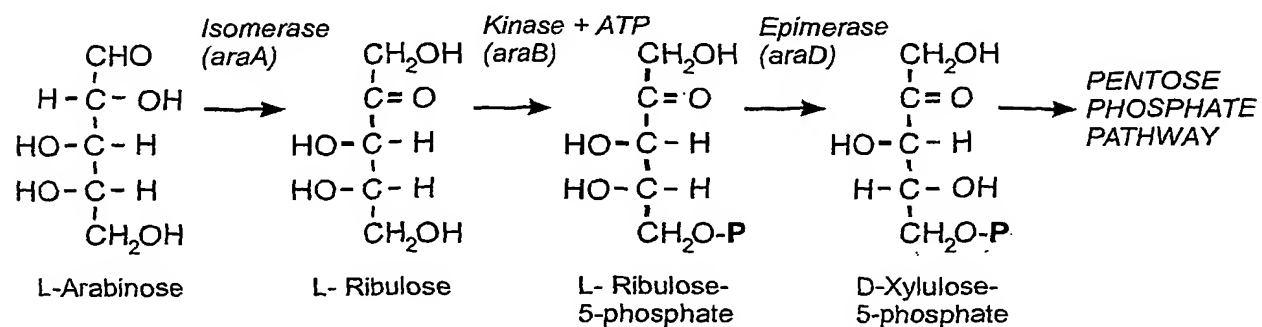


Figure 1

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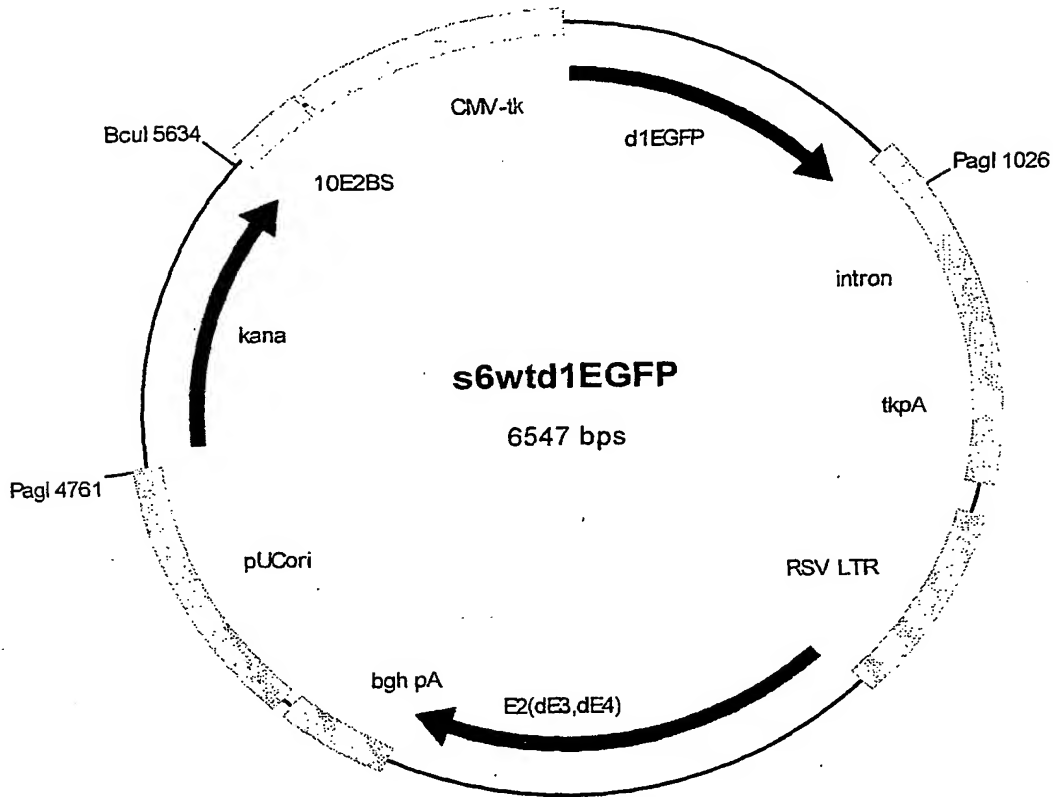


Figure 2

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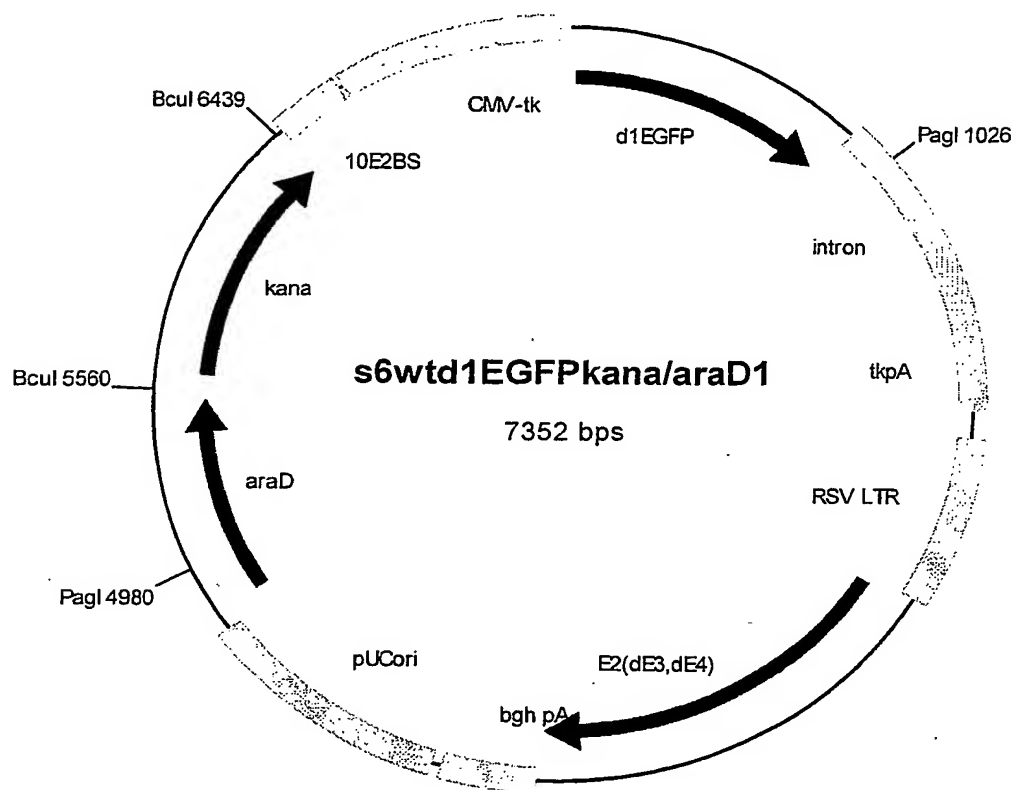


Figure 3

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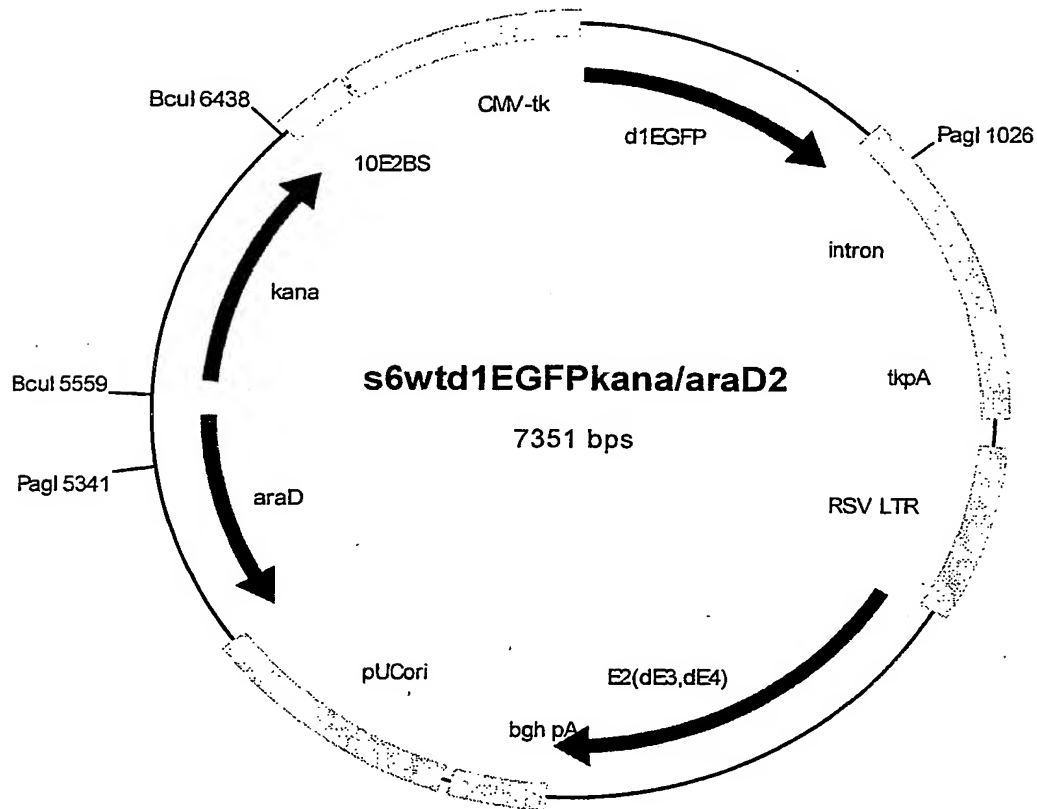


Figure 4

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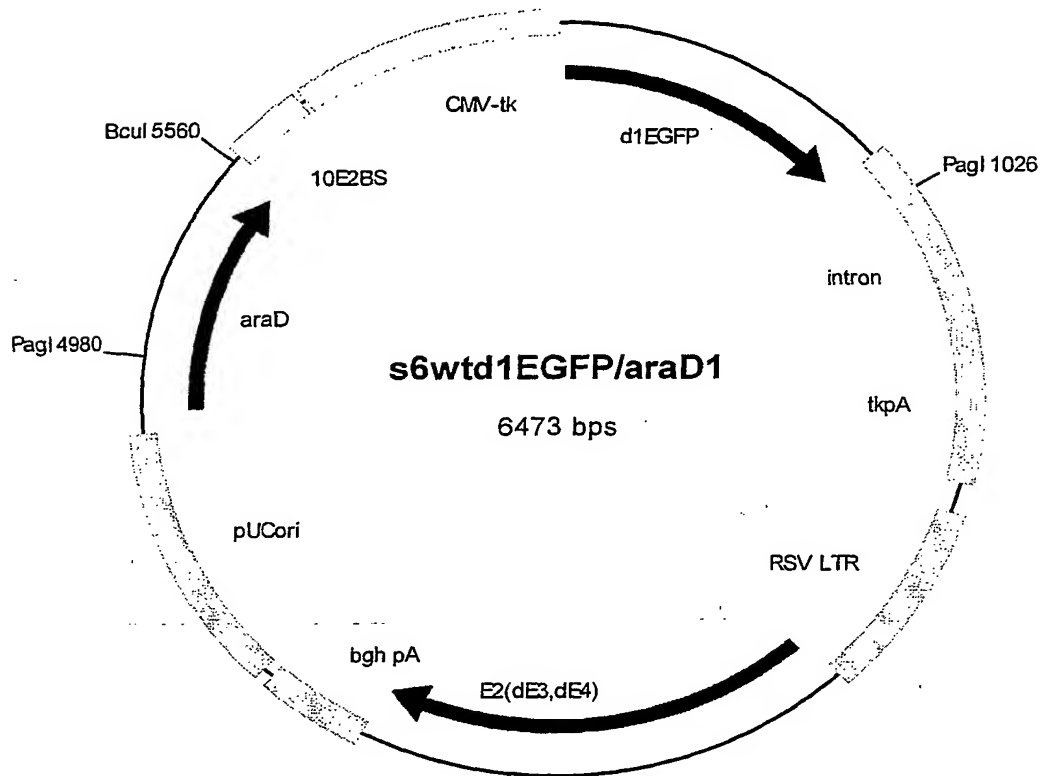


Figure 5

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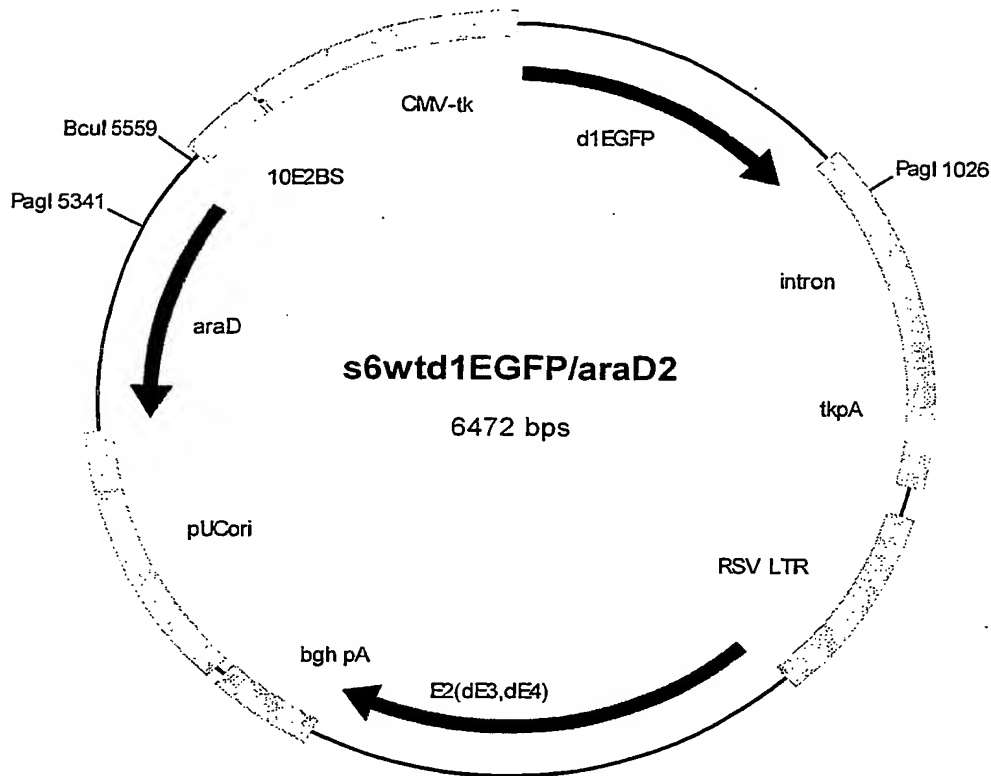


Figure 6

Figure 7

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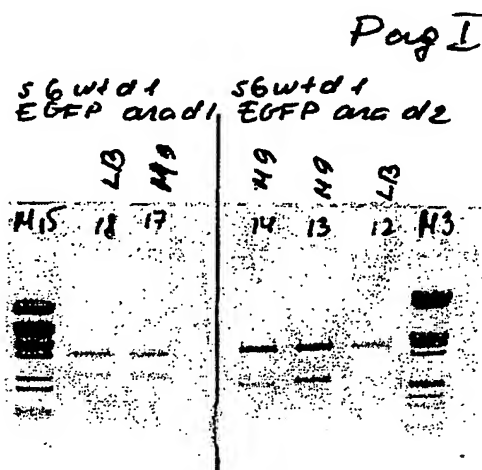


Figure 8



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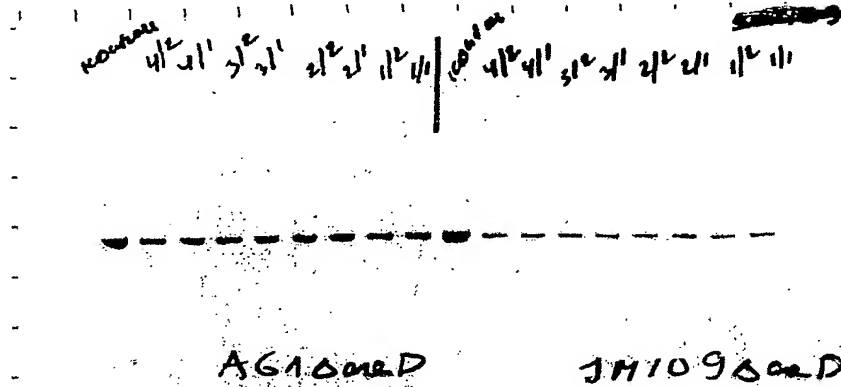


Figure 9

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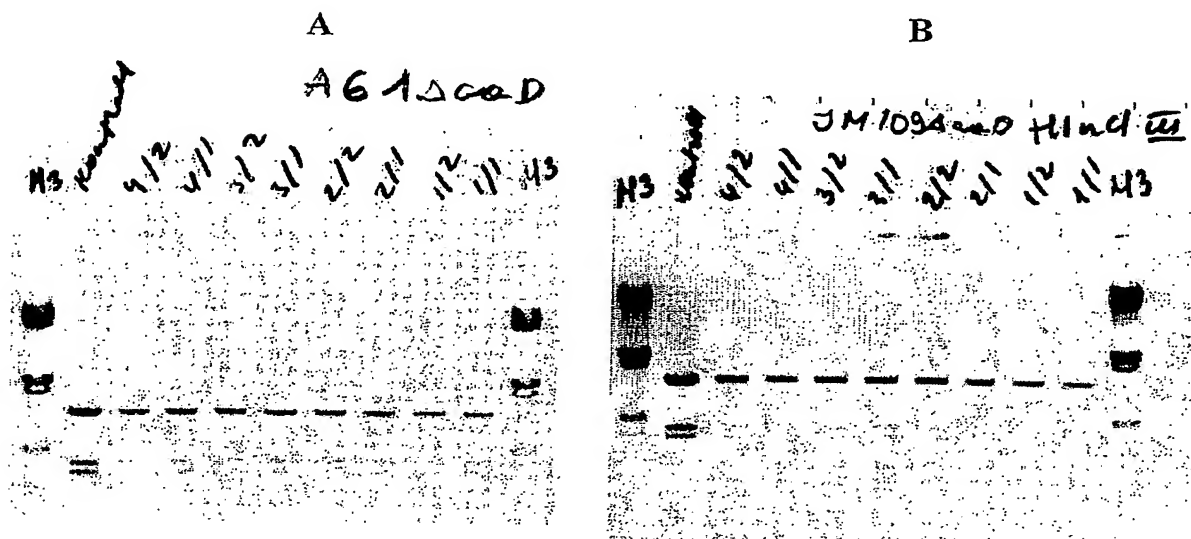


Figure 10

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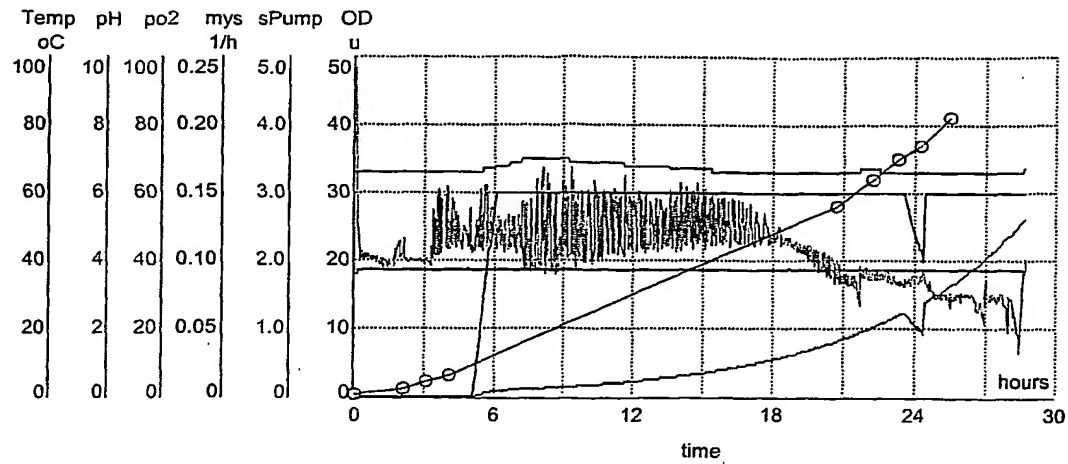


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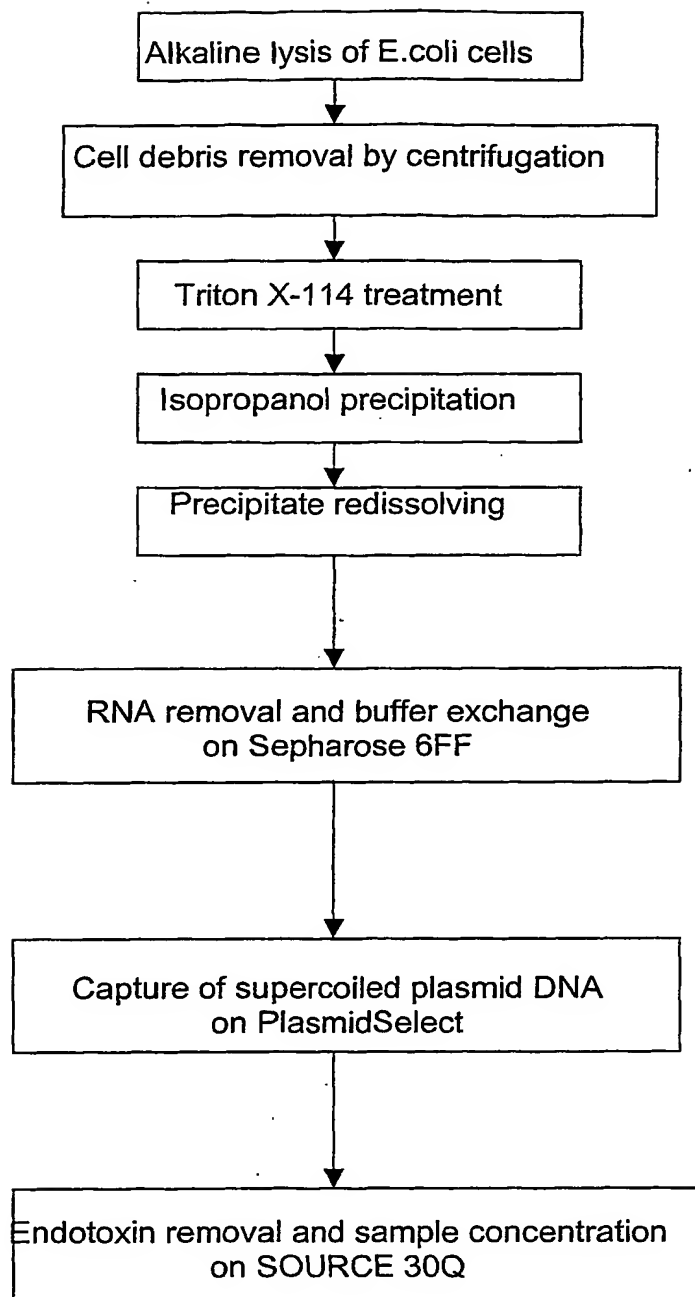


Figure 12

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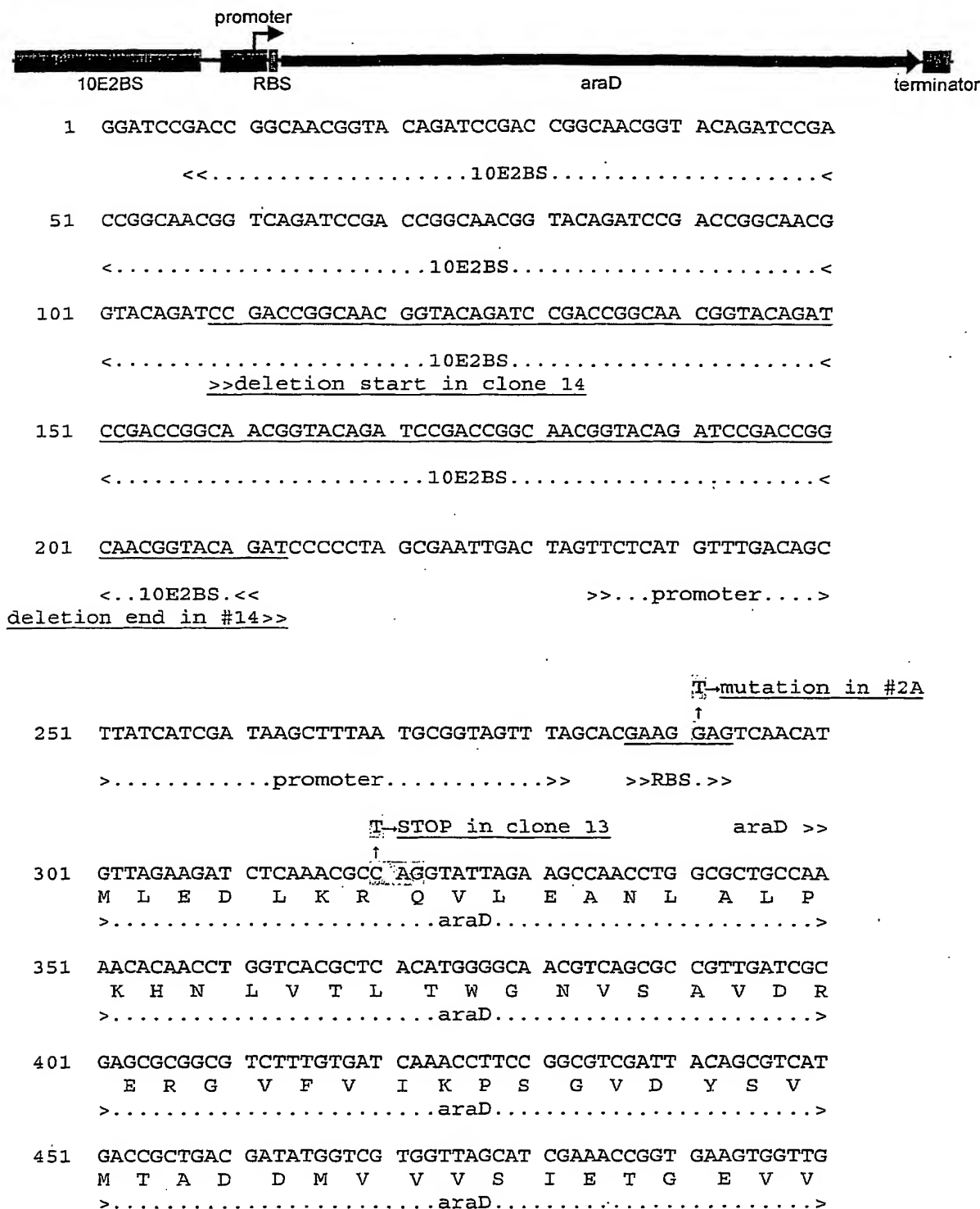


Figure 13

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```

501  AAGGTACGAA AAAGCCCTCC TCCGACACGC CAACTCACCG GCTGCTCTAT
      E G T K K P S S D T P T H R L L Y
      >.....araD.....>

551  CAGGCATTCC CCTCCATTGG CGGCATTGTG CATACGCACT CGCGCCACGC
      Q A F P S I G G I V H T H S R H
      >.....araD.....>

601  CACCATCTGG GCGCAGGCGG GTCAGTCGAT TCCAGCAACC GGCACCAACC
      A T I W A Q A G Q S I P A T G T T
      >.....araD.....>

651  ACGCCGACTA TTTCTACGGC ACCATTCCCT GCACCCGCAA AATGACCGAC
      H A D Y F Y G T I P C T R K M T D
      >.....araD.....>

701  GCAGAAATCA ACGGCGAATA TGAGTGGGAA ACCGGTAACG TCATCGTAGA
      A E I N G E Y E W E T G N V I V
      >.....araD.....>

751  AACCTTTGAA AAACAGGGTA TCGATGCAGC GCAAATGCCC GGCGTTCTGG
      E T F E K Q G I D A A Q M P G V L
      >.....araD.....>

801  TCCATTCCCA CGGCCCGTTT GCATGGGGCA AAAATGCCGA AGATGCGGTG
      V H S H G P F A W G K N A E D A V
      >.....araD.....>

851  CATAACGCCA TCGTGCTGGA AGAGGTCGCT TATATGGGGA TATTCTGCCG
      H N A I V L E E V A Y M G I F C
      >.....araD.....>

901  TCAGTTAGCG CCGCAGTTAC CGGATATGCA GCAAACGCTG CTGGATAAAC
      R Q L A P Q L P D M Q Q T L L D K
      >.....araD.....>

951  ACTATCTGCG TAAGCATGGC GCGAAGGCAT ATTACGGGCA GTAATGACAG
      H Y L R K H G A K A Y Y G Q -
      >.....araD.....>>
                                     terminator >>

1001 CCCGCCTAAT GAGCGGGCTT TTTTTCCTAT
      >.....terminator.....>>

```

Figure 13 (cont.)

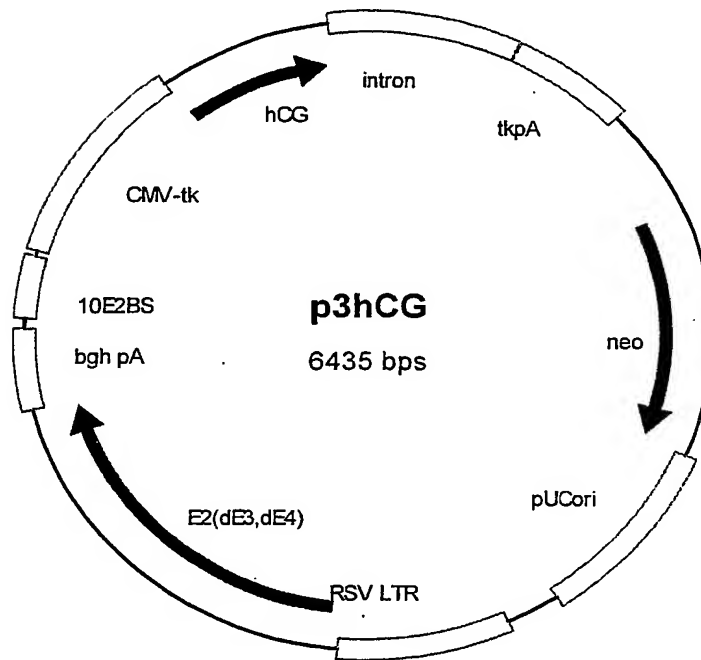


Figure 14

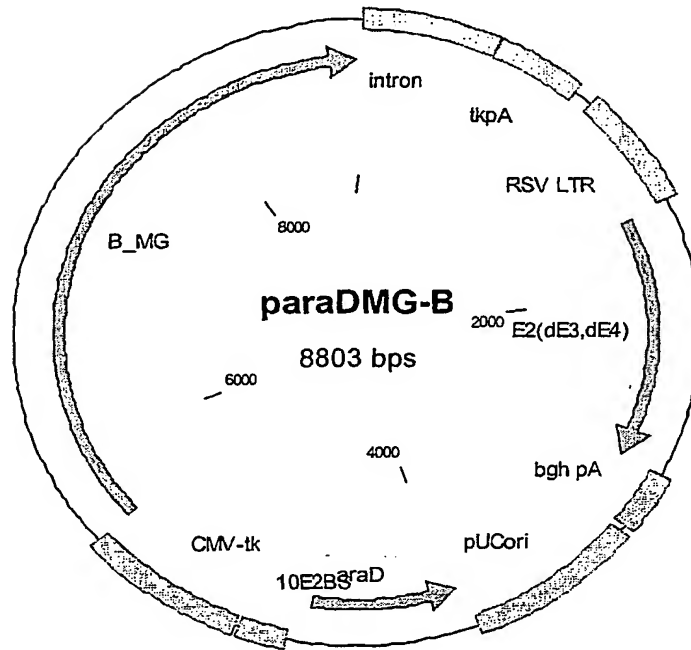


Figure 15



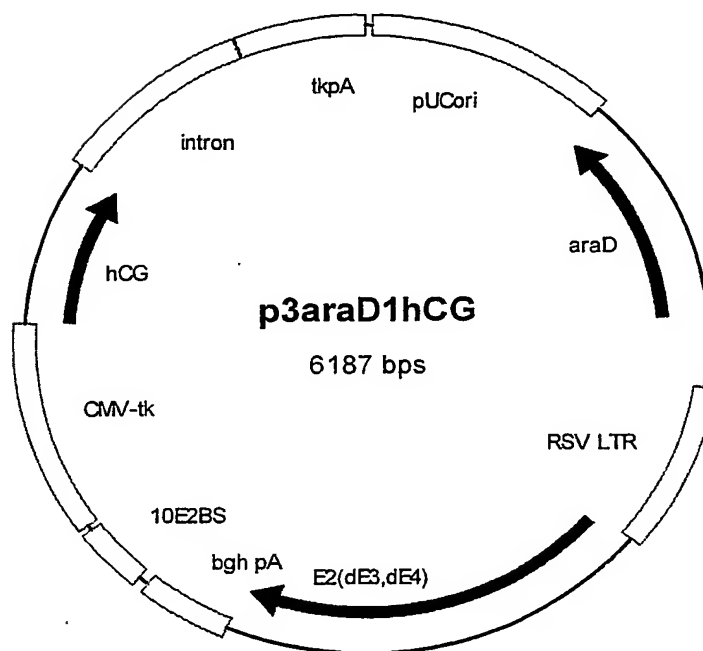


Figure 16

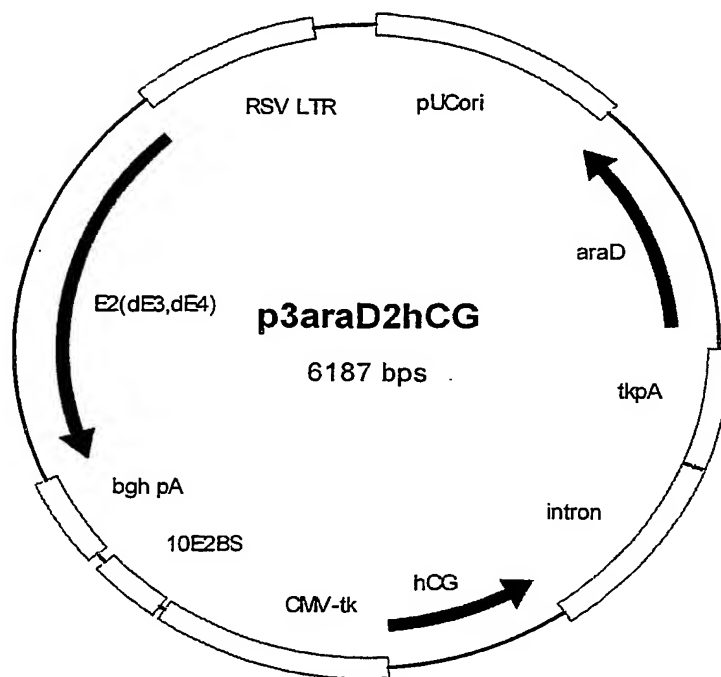


Figure 17

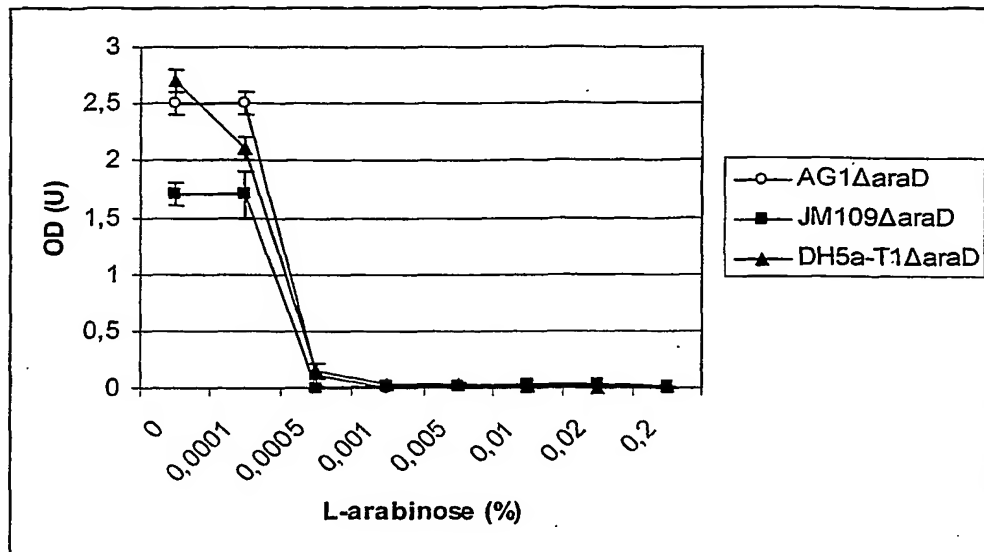


Figure 18

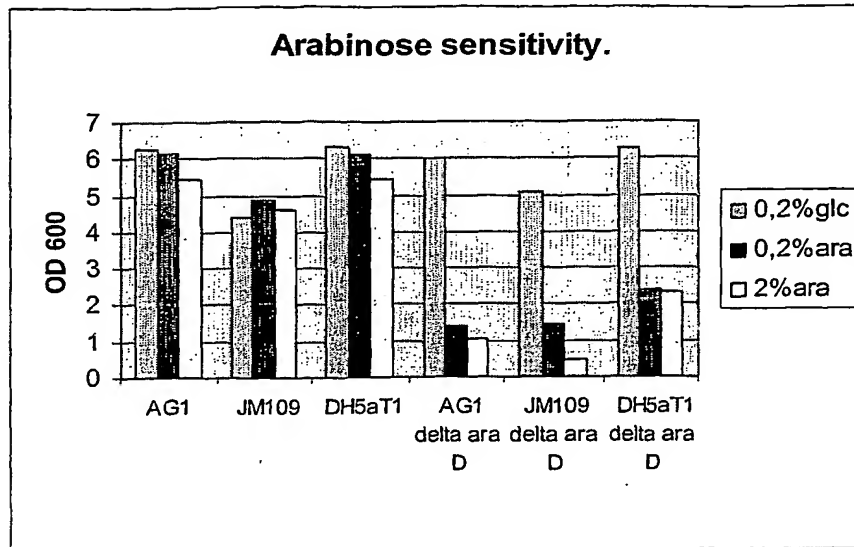


Figure 19

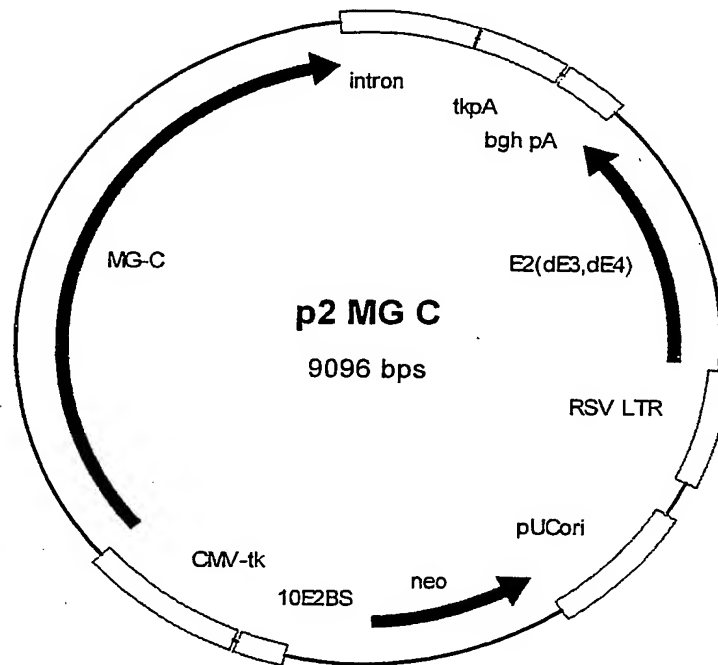


Figure 20

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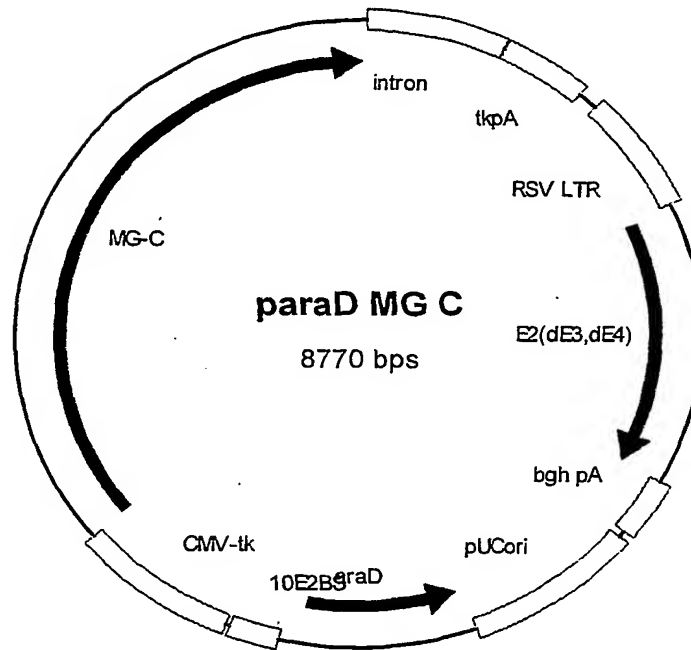
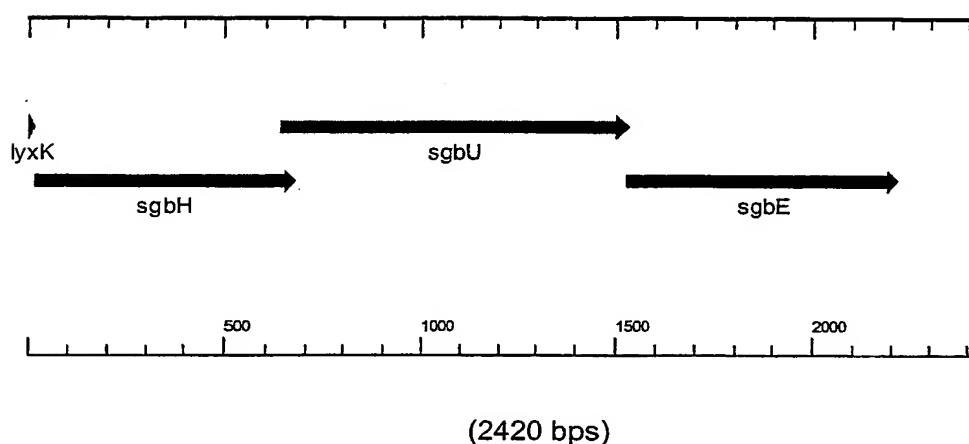


Figure 21

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```

1400  ATAAACTGAA CTATCGCGGT TCTTTCCTGA TTGAGATGTG GACCGAAAAA
      >.....sgbU.....>

1450  GCCAAAGAGC CGGTGCTGGA GATTATTCAG GCGCGGCGTT GGATTGAAGC
      >.....sgbU.....>

1500  GCGTATGCAG GAGGCTGGAT TTATATGTTA GAGCAACTGA AAGCCGACGT
      M L E Q L K A D
      >.....sgbU.....>>
      >>.....sgbE.....>

1550  GCTGGCGGCG AATCTGGCGC TTCCCGCTCA CCATCTGGTG ACGTTCACCT
      V L A A N L A L P A H H L V T F T
      >.....sgbE.....>
  
```

Figure 22

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1600 GGGGCAATGT CAGCGCGGTA GACGAAACGC GGCAATGGAT GGTAATCAAA
      W G N V S A V D E T R Q W M V I K
      >.....sgbE.....>

1650 CCTTCCGGCG TCGAGTACGA CGTGATGACC GCCGACGATA TGGTGGTGGT
      P S G V E Y D V M T A D D M V V
      >.....sgbE.....>

1700 TGAGATAGCC AGCGGTAAGG TGGTGAAGG CAGCAAAAAA CCCTCTTCCG
      V E I A S G K V V E G S K K P S S
      >.....sgbE.....>

1750 ATACACCAAC GCATCTGGCG CTCTACCGTC GCTATGCCGA AATTGGCGGT
      D T P T H L A L Y R R Y A E I G G
      >.....sgbE.....>

1800 ATTGTGCATA CCCACTCGCG CCACGCCACC ATCTGGTCAC AGGCCGGGCT
      I V H T H S R H A T I W S Q A G
      >.....sgbE.....>

1850 GGATCTCCCC GCCTGGGGCA CCACCCACGC CGATTATTTT TACGGTGCCA
      L D L P A W G T T H A D Y F Y G A
      >.....sgbE.....>

1900 TCCCCTGCAC GCGACAGATG ACCGCAGAGG AGATTAACGG CGAATATGAA
      I P C T R Q M T A E E I N G E Y E
      >.....sgbE.....>

1950 TATCAGACCG GCGAAGTGAT CATTGAAACC TTCGAAGAAC GTGGCAGGAG
      Y Q T G E V I I E T F E E R G R
      >.....sgbE.....>

2000 TCCGGCACAA ATCCCGGCGG TGCTGGTGCA TTCTCACGGC CCGTTCGCAT
      S P A Q I P A V L V H S H G P F A
      >.....sgbE.....>

2050 GGGGTAAAAA CGCCGCCGAT GCCGTGCATA ACGCCGTAGT ACTCGAAGAA
      W G K N A A D A V H N A V V L E E
      >.....sgbE.....>

2100 TGCGCCTATA TGGGTCTATT CTCGCGCCAG CTTGCGCCGC AGCTCCCTGC
      C A Y M G L F S R Q L A P Q L P
      >.....sgbE.....>

2150 GATGCAAAAC GAACTGCTGG ATAAGCACTA CCTGCGTAAG CATGGGGCCA
      A M Q N E L L D K H Y L R K H G A
      >.....sgbE.....>

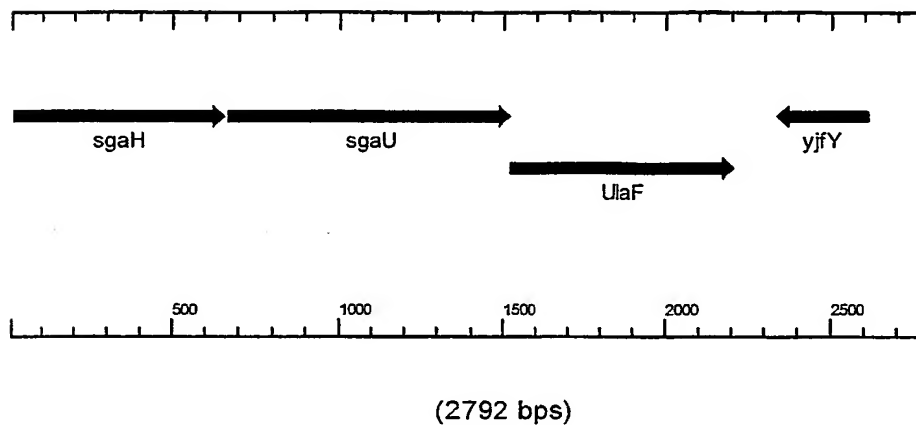
2200 ATGCCTATTA CGGGCAGTAA TCCCTCACGC CGGGGCTTCA TCGCCCCGGC
      N A Y Y G Q -
      >.....sgbE.....>

2250 ACTACGAATT GATATGTTCC TTGCTGTAAC GCCGCTTCCA CGCTGCTGGC

2300 G
  
```

Figure 22 (cont.)





```

1400  CGGGCCGTAC CTGATTGAGA TGTGGAGCGA AACGGCGGAA GACCCGGCGG
      >.....sgaU.....>
1450  CAGAAGTGGC GAAAGCGCGT GATTGGGTGA AAGCGCGCAT GCGAAAGCG
      >.....sgaU.....>
1500  GGCATGGTGG AGGCGGCATA ATGCAAAAGC TAAAACAGCA GGTATTTGAA
      M Q K L K Q Q V F E
      >.....sgaU.....>>
      >>.....UlaF.....>
1550  GCCAACATGG AGCTGCCGCG CTACGGGCTG GTGACCTTTA CCTGGGGCAA
      A N M E L P R Y G L V T F T W G
      >.....UlaF.....>
  
```

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```
1600 CGTCAGCGCT ATCGACCGCG AACGCGGGCT GGTGGTGATC AAGCCCAGCG
    N V S A I D R E R G L V V I K P S
    >.....UlaF.....>

1650 GCGTTGCCTA CGAAACCATG AAAGCGGCCG ATATGGTGGT GGTGATATG
    G V A Y E T M K A A D M V V V D M
    >.....UlaF.....>

1700 AGCGGCAAGG TGGTGAAGG GGAGTATCGC CCATCTCCG AACTGCGAC
    S G K V V E G E Y R P S S D T A
    >.....UlaF.....>

1750 GCATCTCGAA CTCTACCGTC GTTACCCGTC GCTTGGTGGC ATTGTCCATA
    T H L E L Y R R Y P S L G G I V H
    >.....UlaF.....>

1800 CCCACTCCAC TCATGCCACC GCATGGGCGC AGGCGGGGCT GGCGATCCCG
    T H S T H A T A W A Q A G L A I P
    >.....UlaF.....>

1850 GCGTTAGGCA CCACGCACGC CGACTACTTC TTTGGCGACA TTCCGTGTAC
    A L G T T H A D Y F F G D I P C
    >.....UlaF.....>

1900 GCGCGGGTTA AGCGAAGAAG AGGTGCAGGG CGAGTATGAA CTGAACACCG
    T R G L S E E E V Q G E Y E L N T
    >.....UlaF.....>

1950 GCAAAGTGAT TATCGAAACG CTGGGCAACG CCGAGCCGCT GCATACGCCG
    G K V I I E T L G N A E P L H T P
    >.....UlaF.....>

2000 GGAATTGTGG TGTATCAGCA CGGGCCGTTT GCCTGGGGGA AAGATGCTCA
    G I V V Y Q H G P F A W G K D A
    >.....UlaF.....>

2050 CGATGCGGTG CATAACGCGG TGGTGATGGA AGAAGTGGCG AAAATGGCGT
    H D A V H N A V V M E E V A K M A
    >.....UlaF.....>

2100 GGATTGCCCG CGGCATTAAC CCACAACCTCA ATCACATCGA CAGCTTCCTG
    W I A R G I N P Q L N H I D S F L
    >.....UlaF.....>

2150 ATGAATAAAC ACTTCATGCG TAAACACGGT CCTAACGCTT ATTACGGGCA
    M N K H F M R K H G P N A Y Y G
    >.....UlaF.....>

2200 GAAGTAGAAC ACGCGCTGCG GAAATTTCTT TCCTCGGGAG ATAACGGTGC
    Q K -
    >....>> UlaF

2250 TAATCCGCA GCCGTTTTTC AAAAAAAGC CCCCTGCGAA GGGGGCAAAG

2300 C
```

Figure 23 (cont.)